
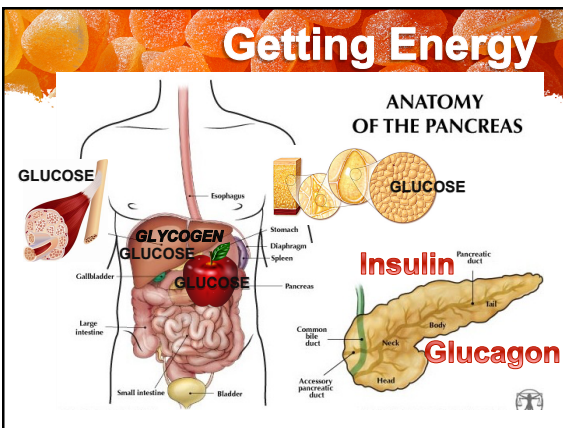
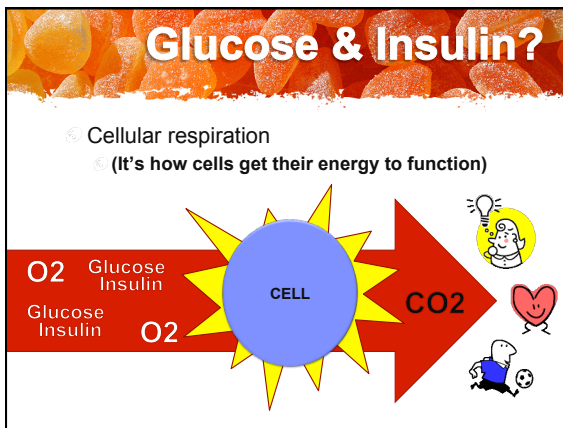
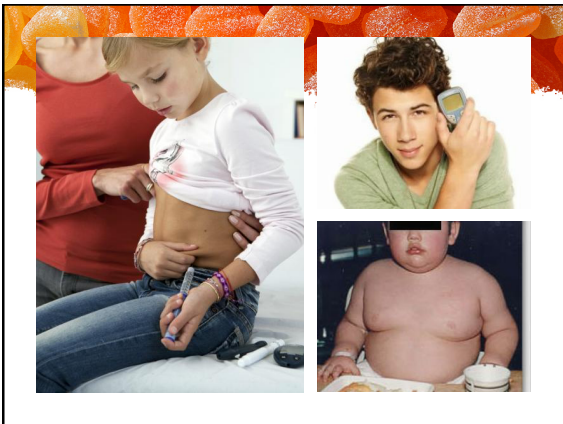


Sweet Kids: Diabetic Case Studies in Children



Valerie Quick, MSN, RN, EMT-I
UVA Prehospital Education



GYLCEMIC INDEX

- Number associated with a particular type of food that indicates the food's effect on a person's blood glucose
- Glucose = 100
- Apple = 39
- Peach = 42
- Coke = 63
- Gatorade = 78
- Bagel = 72
- Pizza = 80
- Corn Flakes = 93
- Baked Potato = 111

Causes of Diabetes

T y p e 2	Genetics	T y p e 1
	Environmental factors	
	Other factors (i.e.virus)	
T y p e 2	Lack of activity	T y p e 1
	Obesity	

Type 1 Diabetes

- Most often diagnosed in children and young adults
- Previously known as Juvenile Diabetes
- Insulin-dependent
- Autoimmune
- Body does not produce insulin

Insulin
Glucose
Insulin

CELL

NO!!!!!!

My diabetes is not like your grandma's!

Type 2 Diabetes

- Typically diagnosed in adulthood
- Also found in overweight children
- Non-insulin-dependent
- Body fails to produce and properly use insulin

Glucose
Glucose
Insulin

CELL

ONE CAN OF SODA IS 3X THE DAILY SUGAR MAX FOR KIDS

Childhood Obesity

- Doubled in past 30 years
 - 1 in 3 overweight
- Of all pediatrics with diabetes, type 2 = 15%
- High blood pressure and high cholesterol
- Obese children had 12% thicker heart muscle
- 27% thicker left ventricles
 - Less contractility
 - Decreased heart function

Long Term Complications

- Heart disease and stroke
- Kidney failure
- Vision problems including blindness
- Gum disease and tooth loss
- Loss of limbs

Diabetic Emergencies

- Hypoglycemia
- Diabetic Ketoacidosis
- Cerebral Edema

ALERT!

Meet Ethan

- Happy 4 year old
 - Type 1 Diabetic
- Blood sugar checks with meals
- Calculate Carbohydrates
- Insulin administration
- Service Dog
- Parents wake up at night to check BS



Case #1 Lethargic Toddler

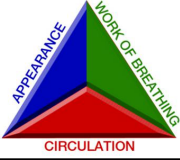
- Dispatch information:
 - 13 month old male with vomiting
- Mom reports: "He vomited twice in past hour but hasn't been feeling well for the past couple of days."



*Ethan's Story has been embellished slightly

Pediatric Assessment Triangle

- A – Appearance
 - Thin child, laying in mom's arms, tracking with eyes but not moving very much
- B – Breathing
 - Rapid but not labored. No wheezing/stridor/rhonchi
- C – Circulation
 - Warm, dry, chapped lips





History

- Mom states that he has been more lethargic today and vomited up a large amount. Over the past few weeks she has been concerned that his clothes are looser but has been drinking and eating a lot. He drinks so much he is "peeing through his diapers"




Physical

- Neuro: Awake but lethargic, PERL
- CV: fast, thready peripheral pulse
- Resp: Faster but no difficulty. Clear/equal breath sounds
- GI/GU: +vomiting, denies diarrhea, frequent diapers, stooling normally
- Skin: lips chapped, tongue dry, poor skin turgor



Vitals

- Heart Rate: 148
- Respiratory Rate: 46
- SPO2: 98% -RA
- Cap Refill: 3-4 seconds
- ECG: Sinus Tachycardia, no t-wave abnormality
- Blood sugar

378



Treatment

- Monitor ABCs
- ECG
- IV fluids – 20 mL/kg
 - 13 month
 - $(2 \times \text{age in years}) + 8 = 10\text{kg}$
 - $10 \text{ kg} \times 20 \text{ mL/kg} = 200 \text{ mL NS Fluid Bolus}$
- Transport to Appropriate Hospital
 - Pediatric Facility



Diagnosis & Disposition

- Diagnosed with new onset diabetes & DKA
- Admitted to PICU for careful fluid management and glucose control
- Extensive Diabetes Education



Hyperglycemia: Signs/Symptoms

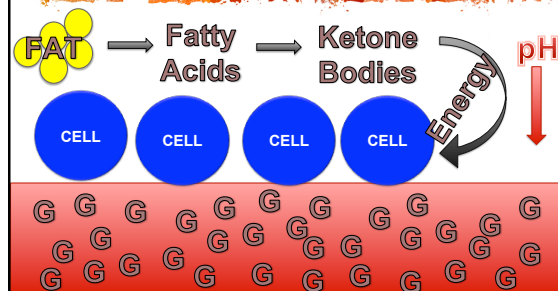


- High blood sugar
 - $\text{BS} > 200$
- Serious problem if not treated
- The 3 Ps
 - Polydipsia
 - Polyphagia
 - Polyuria

Hyperglycemia/DKA

- Slow onset – hours to days
- Presence of ketones
- Causes
 - Insufficient insulin or missed doses
 - Stress response
 - Infections/illnesses
- Metabolic acidosis

DKA



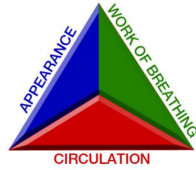
Case #2

I don't want to be different

- Responding to a private residence for the seizure in a 14 year old male
- Friend's mother states that he was playing soccer with his friends out in yard. He was sitting down and fell backwards onto grass and seized for 5 minutes. No injury noted.

Pediatric Assessment Triangle

- A – Appearance
 - Laying on ground not moving, pale
- B – Breathing
 - Shallow ventilations, snoring
- C – Circulation
 - diaphoretic




History

- Playing around in yard with friend
- Known diabetic
- Trying to contact parents
- Friend states that they have been playing soccer for the past 2 hours.
- Unknown last oral intake
- Friend noted that he was complaining of a headache and went to sit down to check his blood sugar.



Physical


- Neuro: Unresponsive, pupils deviated with nystagmus
- CV: thready, fast radial pulse
- Resp: snoring respirations better with positioning, clear breath sounds
- Skin: pale, cool, diaphoretic



Vitals

- Heart Rate: 92
- Respiratory Rate: 16 with positioning
- SPO2: 95% -RA/positioning
- BP: 108/58
- ECG: Sinus, no t-wave abnormality
- Blood sugar

34



Treatment

Airway positioning & management

IV Dextrose
Or
Glucagon



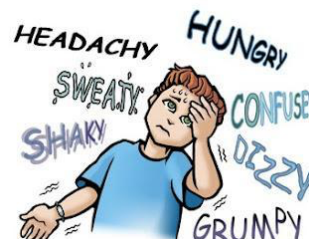
Dilution of Dextrose

- Dextrose 50% (1mL/kg)
 - Kids over 25 kg (around 8 years)
 - Look at vasculature
- Dextrose 25% (2mL/kg)
 - 1-8 years (10-25 kg)
 - Large syringe (Remember weight in kg)
 - 12 kg = 12 mL NS + 12 mL D50
 - Look at vasculature
- Dextrose 10-12.5% (4mL/kg)
 - Under one year

0.5 grams/kg

Hypoglycemia

- Low blood glucose
 - BS < 60
- Body doesn't have enough available glucose to produce energy for cells



Hypoglycemia

- Relatively fast onset
- Causes:
 - Too much insulin
 - Too little food
 - Not enough food for exercise needs
 - Missing meals/snacks
 - Stress, overexcitement

Case #3 Tired and out of Breath

- Dispatch: 9 year old with difficulty breathing
- Mom reports that he had a cough for the past couple of days but today he seems out of breath and is very tired



Pediatric Assessment Triangle

- A – Appearance
 - Obese, awake to voice
- B – Breathing
 - Fast, deep, +congested cough
- C – Circulation
 - Dry



History

- He has been feeling poorly for 3 days
- + cough & congestion
- Low grade fever
- Eating and drinking normally until today. Now decreased



Physical

- Neuro: Awake to voice, able to follow commands, lethargic, PERL
- CV: strong, fast pulse
- Resp: Diffuse Rhonchi
- GI/GU: Abdominal pain
- Skin: Dry mucous membranes

Vitals

- Heart Rate: 128
- Respiratory Rate: 52, deep
- SPO2: 95% on RA
- BP: 156/92
- ECG: Sinus tachycardia with peaked t-waves
- Blood sugar

“HIGH”



Treatment

- Support ABCs
- Fluid Bolus – 20mL/kg
 - Child in 50% for weight @ 65 lbs (30kg)
 - This child is 132 lbs (60 kg)
 - $60 \times 20 = 1200 \text{ mL (1.2 L)}$
- Bicarb controversial in pediatrics due to increased potential for cerebral edema
- Potassium may be high right now but will start shifting quickly.
 - Don't mess with it! (Wait for labs)

Questions???

valquick@virginia.edu

